

JMPS Technical Overview



Mission Planning SEIC Industry Day

16 Dec 02



JMPS Goals



→ ***Mission Planning Fly, Fight,***

Mission Statement

- Evolve world-class joint mission planning capabilities to support the war-fighter today and support Joint Vision 2010

Objectives

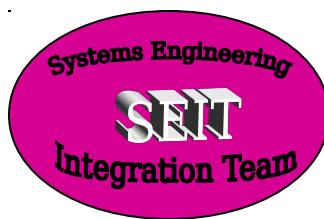
- Scalable framework for MP systems (AF, Navy, SOF, Army)
- Collaborative interservice mission planner
- COE Compliance
- Reduce life-cycle costs
- Capability \geq legacy systems
- Smooth migration



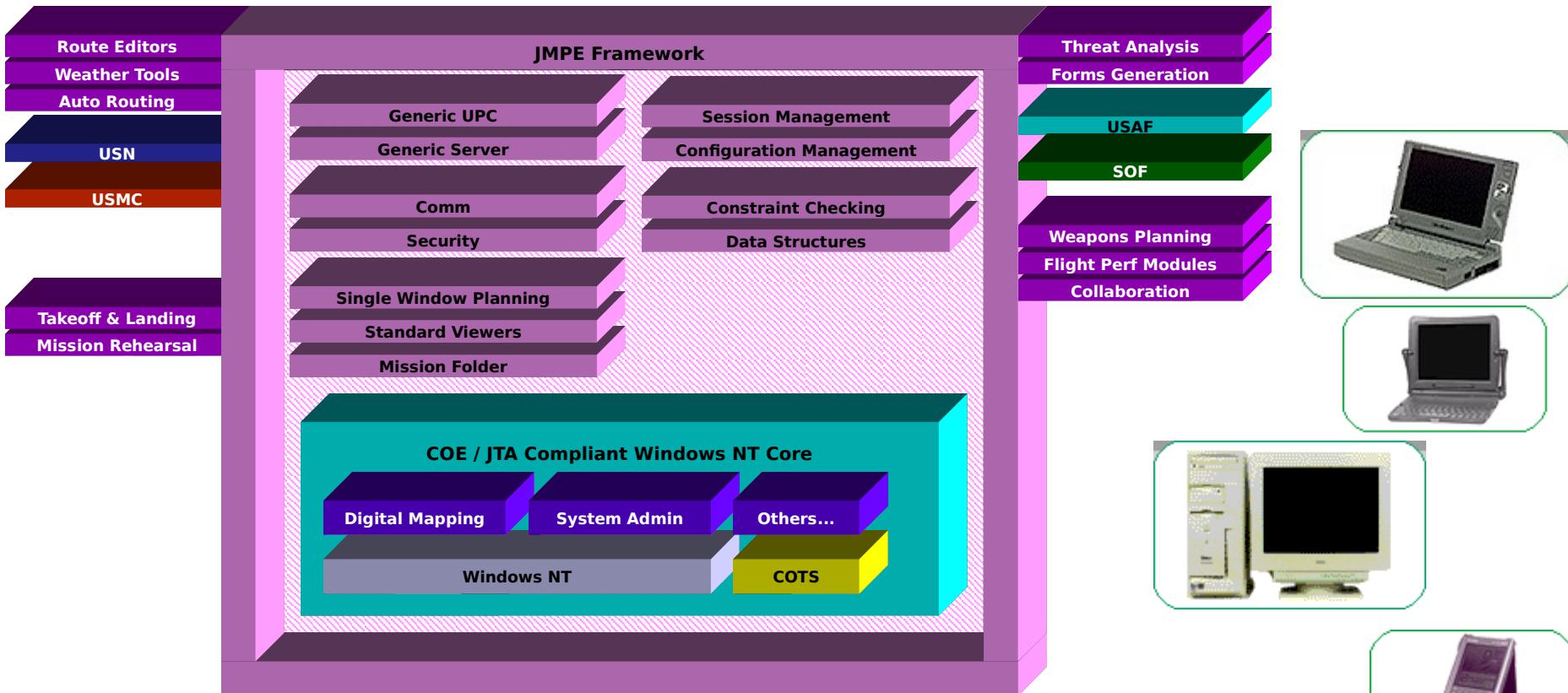
JMPS Vision

JMPE +Service

Unique+Hardware

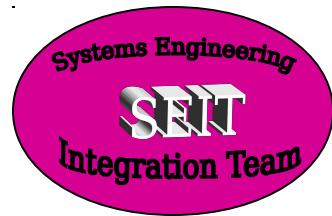


Mission Planning Fly, Fight,





Architectural Goals

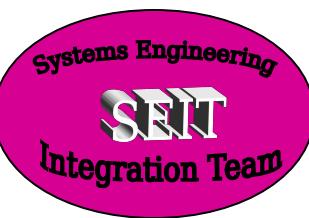


→ ***Mission Planning Fly, Fight,***

- Meet planner expectations for functionality and ease of use
 - The benefit is better plans in less time
- Empower developers to implement unique requirements
 - The benefit is enhanced functionality at an affordable price
- Support asynchronous component integration
 - The benefit is fewer schedule dependencies leading to a shorter, more productive integration and fielding effort
- Interact through a Windows/PFPS-like interface
 - The benefit is intuitive behavior and systems that are readily scaled and configured to the planning environment, reducing training time
- Access planning data across the network or on a laptop seamlessly
 - The benefit is rapid, user friendly information access
- Enable collaborative problem solving
 - The benefit is rapid and effective plan development



Ease of Use



Lesson Learned - Although planning system may provide world-class functionality, if it is difficult to use it will be judged a failure by its users



Architectural Features



Intuitive Environment - leverage MS Office & PFPs



Automated Briefings - reduce planning time



Mission/Strike Binders - user oriented view of plan



Drag N' Drop Planning - intuitive paradigm



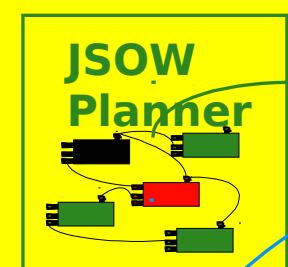
Virtual Planning Surface Single Window Planning

Integrated Platform & Weapon Plan

- Single Planner
- Collaborative Planners



A Composite View is Presented in a Single Planning Window



Virtual Planning Surfaces

JSOW

F/A-18

MCG&I



2D



3D



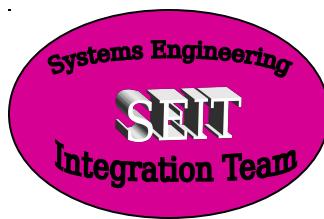
Imagery



Plug 'n Play MCG&I Components



Coordinated Planning

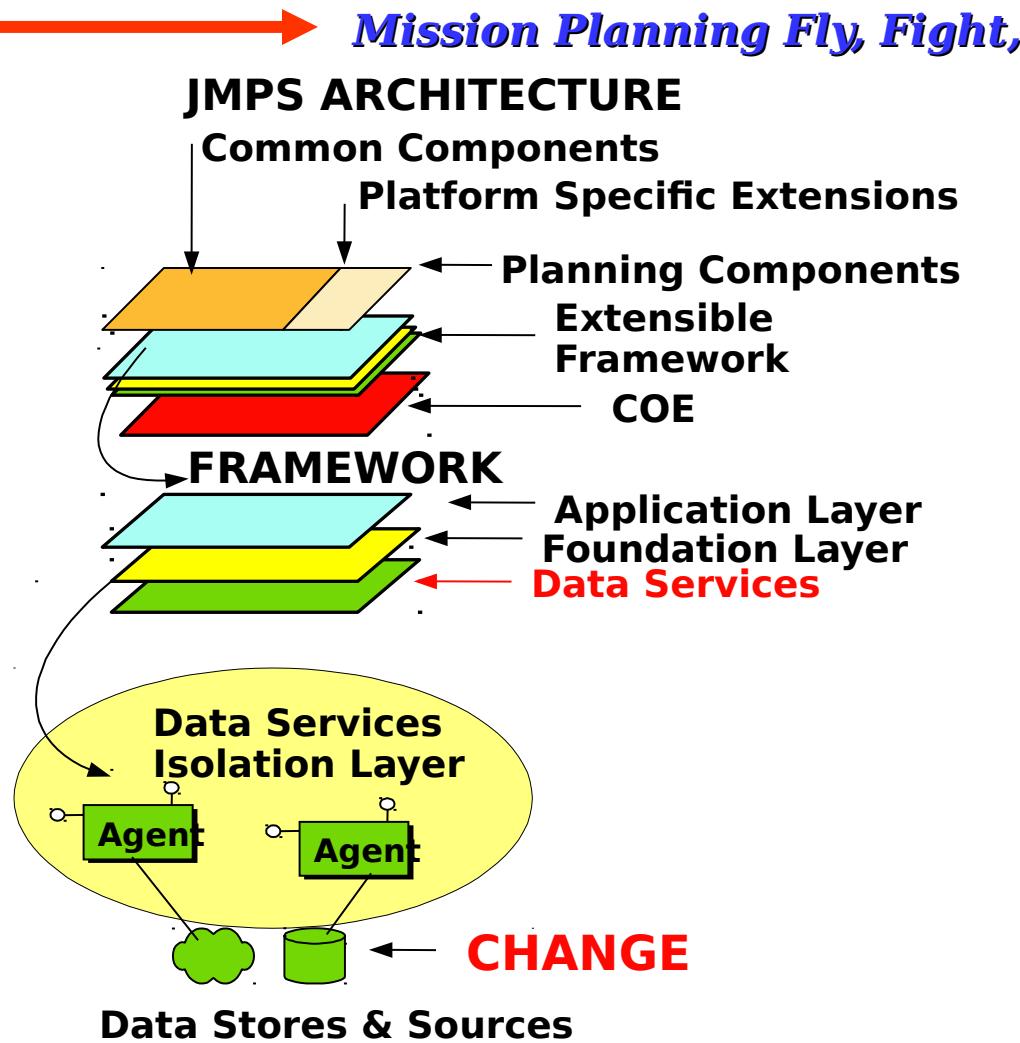




Layered Architecture



- Architecture separates business logic from data sources
 - Framework Data Services provides isolation layer
 - Data access agents localize impact of change
 - Concept supports multiple data sources for same data type (e.g., weather data)



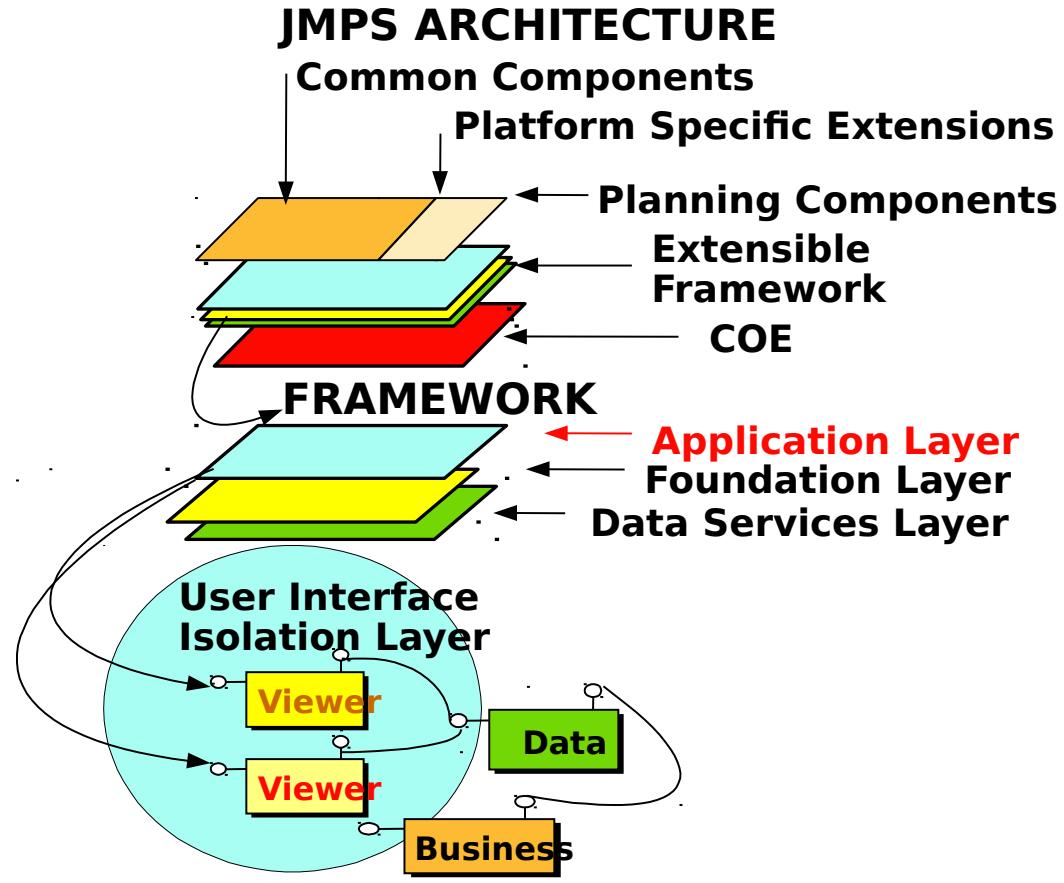


Layered Architecture



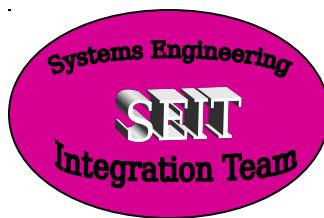
- **Architecture separates USI from business logic and data**
 - Framework provides viewers and view container
 - Supports use of viewers scaled to user planning problem and hardware platform
 - Supports multiple views of the same data object (collaboration)
 - Allows independent evolution of USI (e.g., multimedia)

→ **Mission Planning Fly, Fight,**



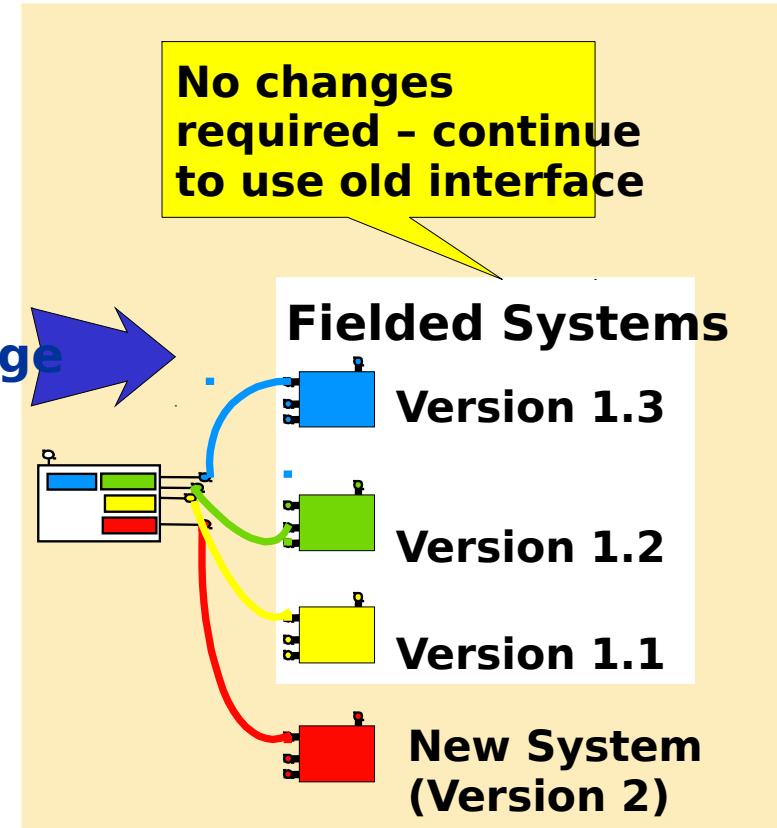


COM Versioning



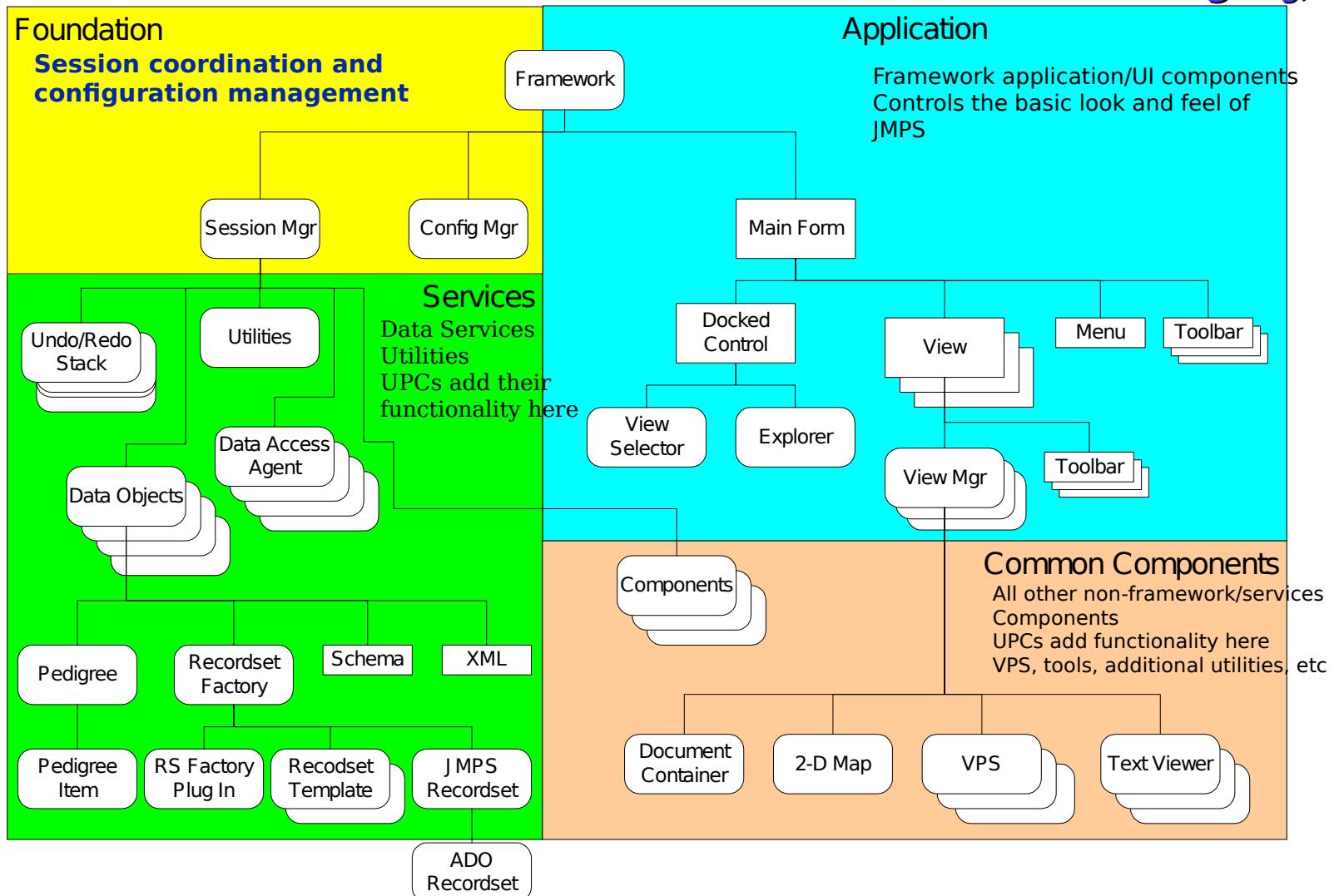
Mission Planning Fly, Fight,

- Old interfaces maintained
 - Minimizes impact to fielded systems
 - Supports asynchronous fielding
- COM is a binary standard
 - Language independent
 - Supports evolution
- Components bind at run time
 - Run-time configuration build
 - Reduces fielding costs



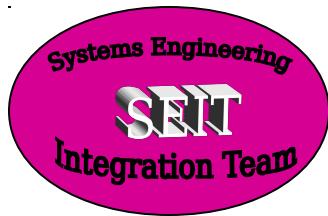


High level component relationships



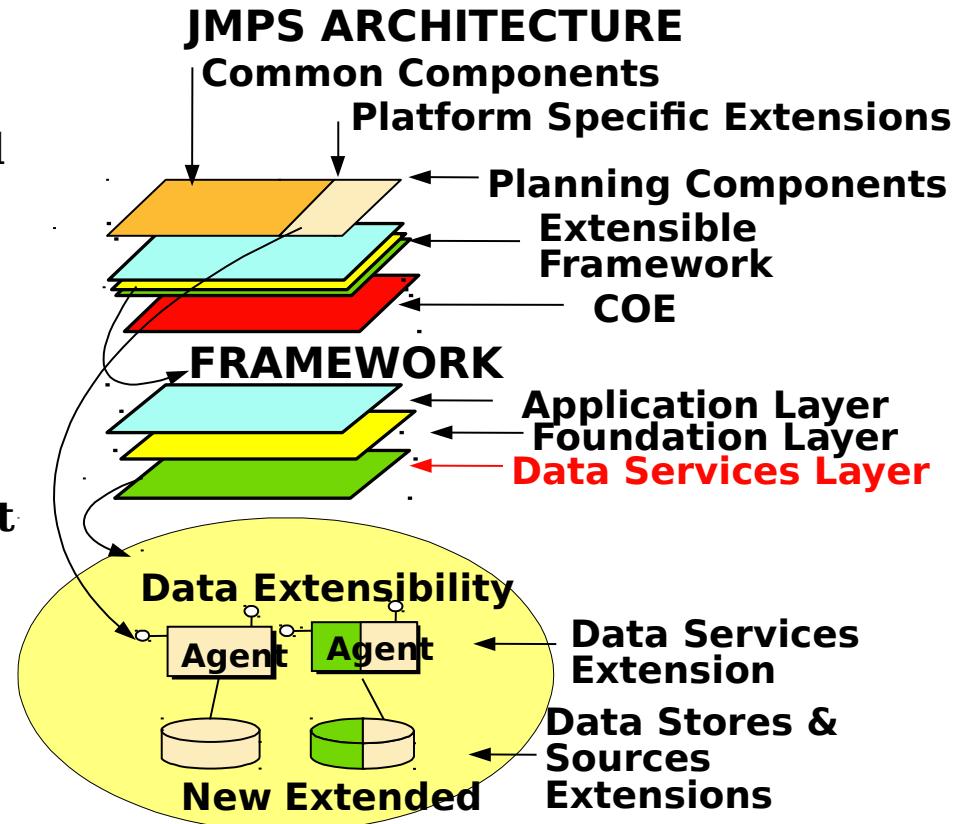


Data Structure Extensibility



→ ***Mission Planning Fly, Fight,***

- For platform unique data:
 - Developers can extend existing databases or add new ones
 - Developers can access extended or new databases by either extending an existing component or by adding their own new component
 - Extensions can be accomplished without coordination with the framework or other UPC developers



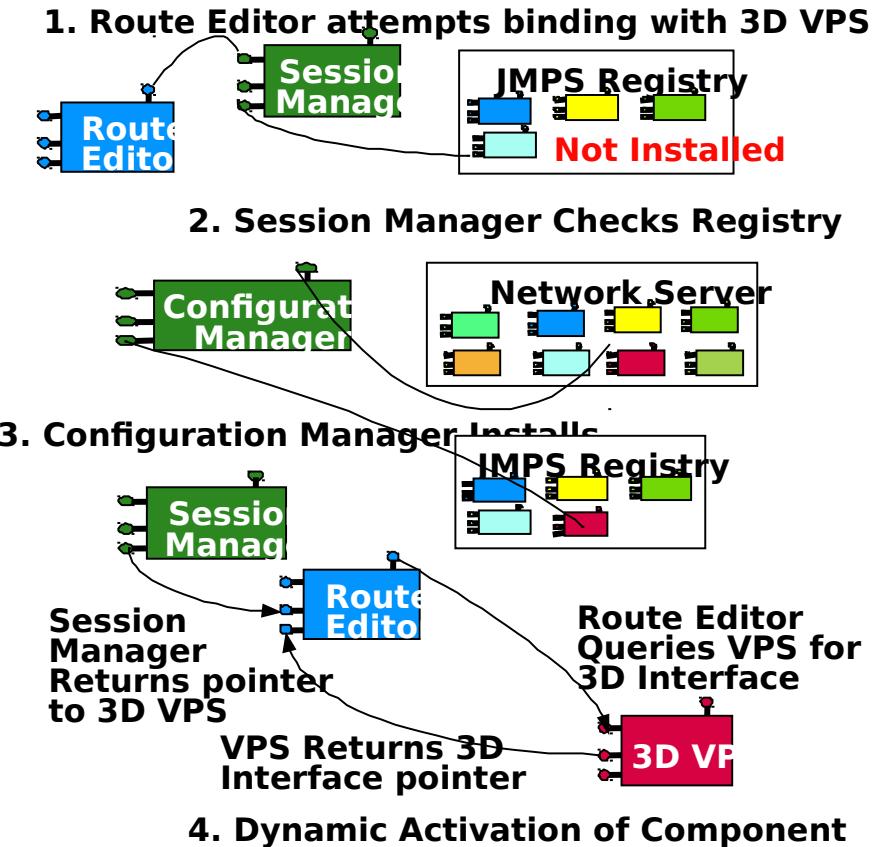


Dynamic Component Discovery



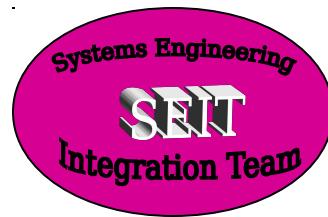
- COM architecture supports dynamic run-time discovery of components
- This allows updated components to be introduced without modification of fielded systems
- New/updated components can be added to a configuration at run time
 - Configuration manager will install from LAN server if component must run locally (e.g., a VPS)
 - Configuration manager maintains rules on what components must be local and what configurations are certified for use

→ **Mission Planning Fly, Fight,**

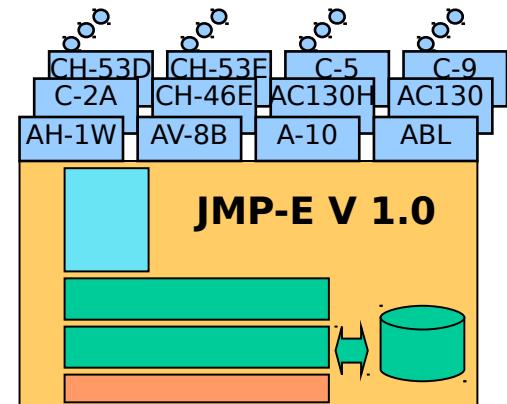
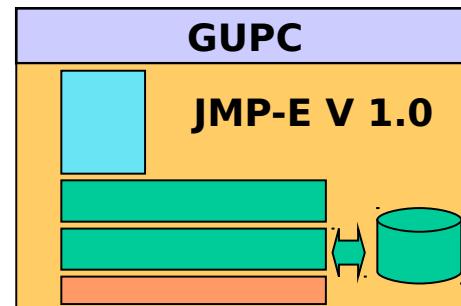
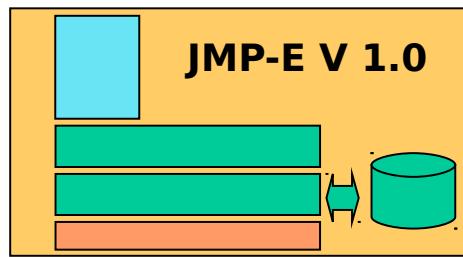
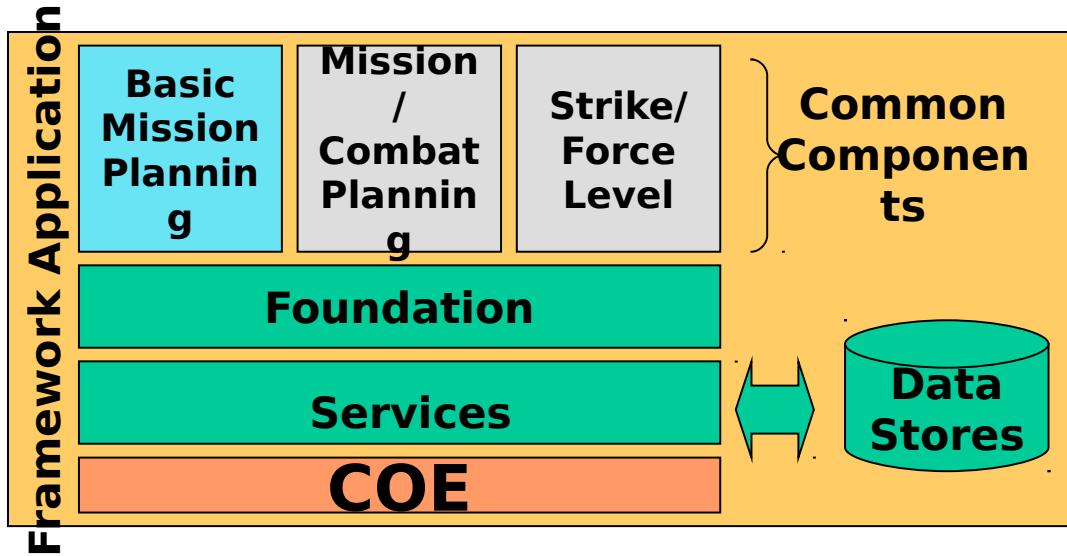




Component Architecture Overview

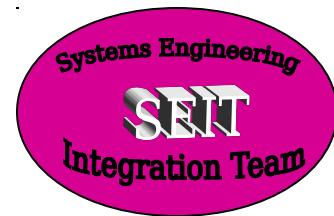


Mission Planning Fly, Fight,

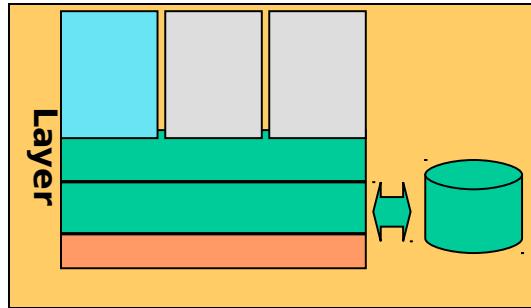




Framework Application Layer



Mission Planning Fly, Fight,



Application Framework
Control of JMPS Workspace

Document Manager (Explorer)
Point-and-Click access to information

View Selector Selection
and initiation of viewers

Framework

Framework Level Viewers

Briefings

Integrated briefing production

Tasks

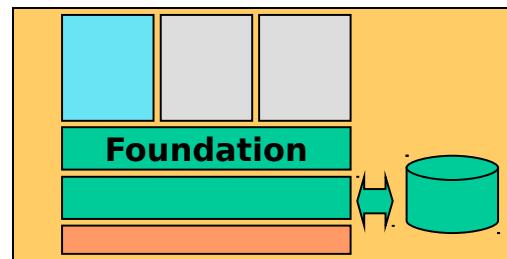
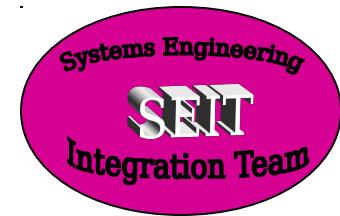
Checklist workflow

JMPS V1

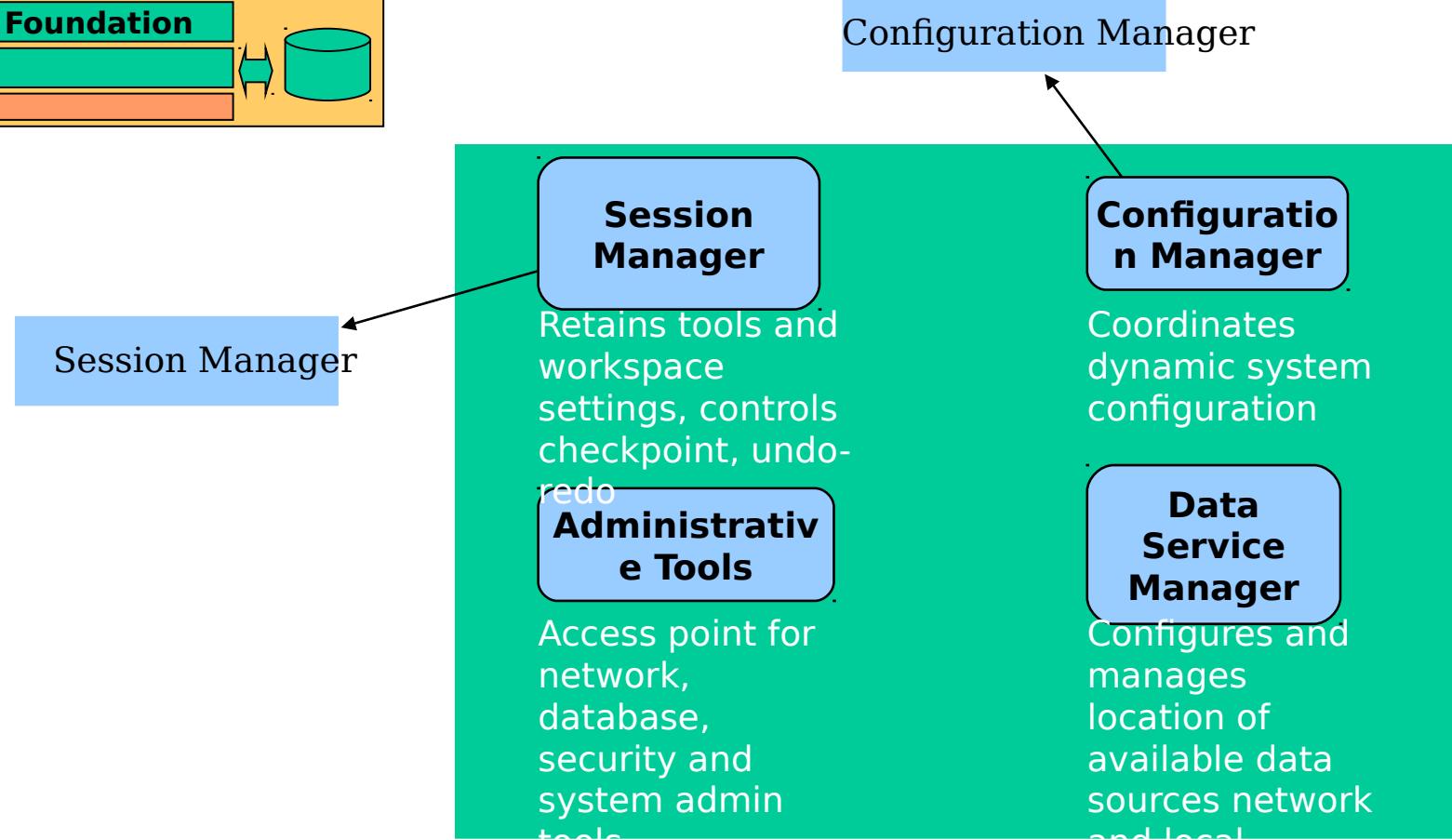
Future



Framework Foundation Layer

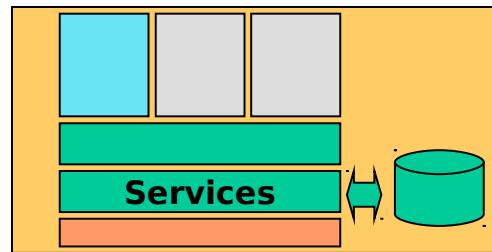
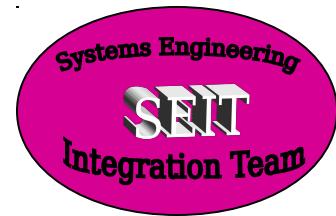


Mission Planning Fly, Fight,

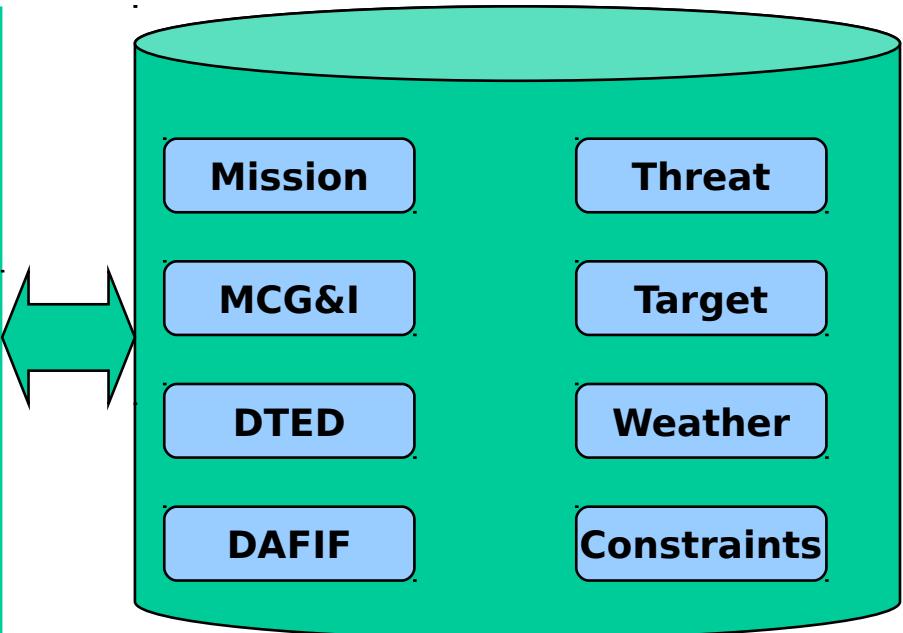
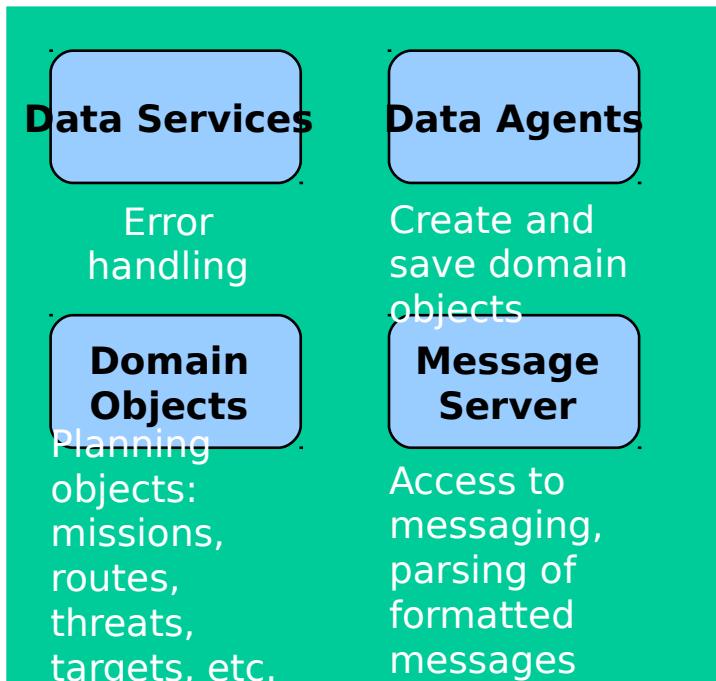


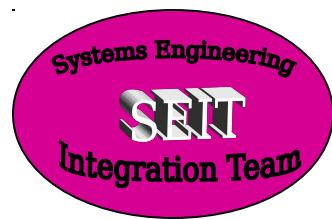


Framework Services Layer

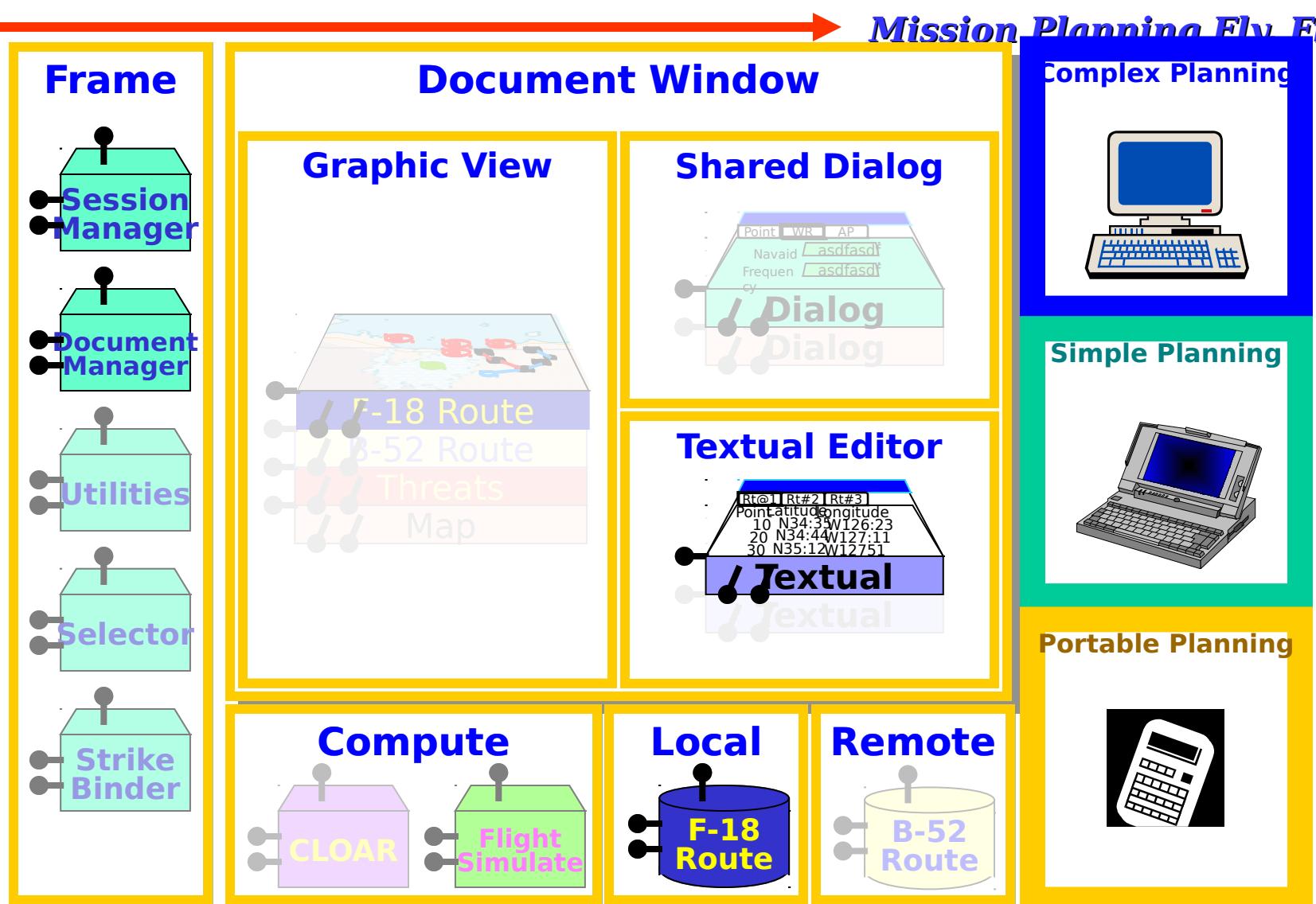


Mission Planning Fly, Fight,



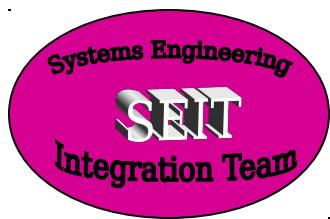


Flexible System Scaling

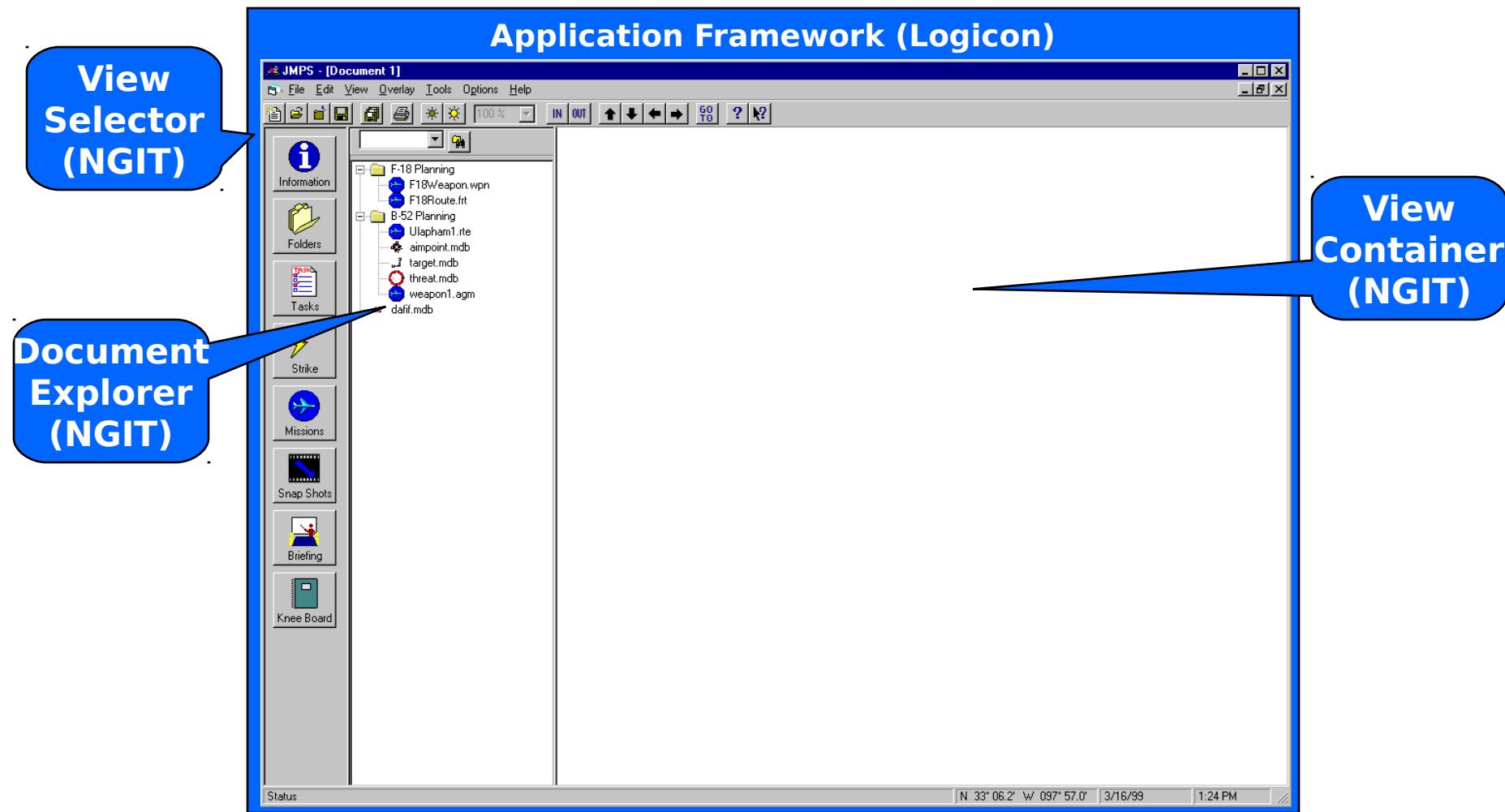




JMPS Application

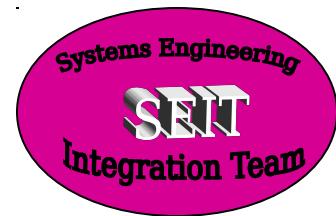


Mission Planning Fly, Fight,



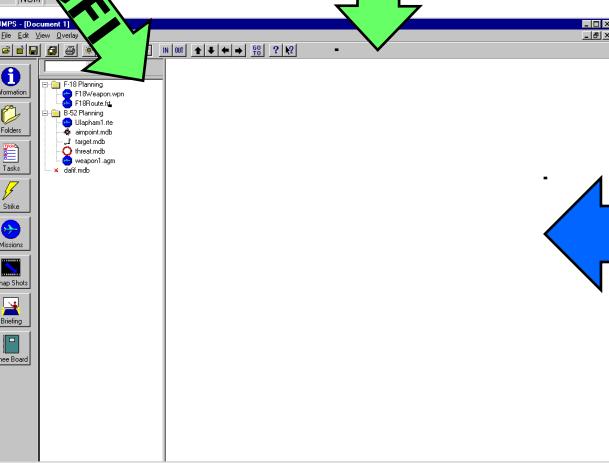


Route Generation

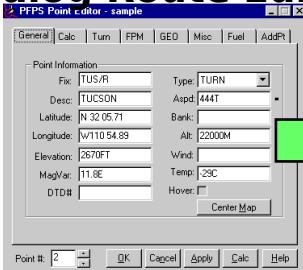


Tabular Route Editor

Turn Pt	PT	Type	Fix/Point	Latitude	Longitude	Elev	Aspd	Altitude	Temp	MH	Leg Time	Leg Dist	Leg Fuel
DTD	ST	Fix/Point	Description	Mag Var	Bank	Wind	Fuel Flow	Wind	MC	Clock Time	Total Dist	Total Dist	Total Fuel
1	ST	XLUFA	N 33.32.10 LUKE AFB	1090		1090M		+13C					
2		TUSAR	T 32° 05.71' N TUCSON 110° 49' W	2670	444T	22000M		-29C					
3		GERSON	N 33.27.38' GILA BEND	790		444T		22000M		-29C			
4		KPHVA	N 33.26.17' PHOENIX SKY H	1133	444T	22000M		-29C					
5		KLUFA	N 33.32.10' LUKE AFB	1088	444T	22000M		-29C					



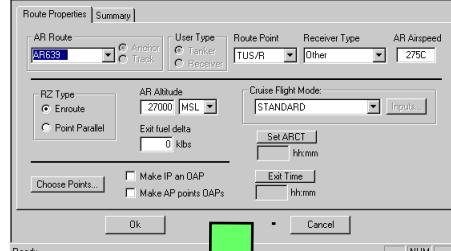
Dialog Route Editor



GFI

Calc

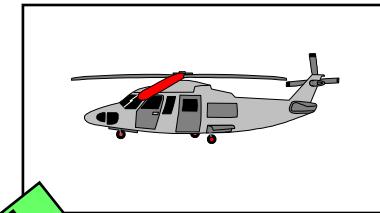
Refuel Editor



12

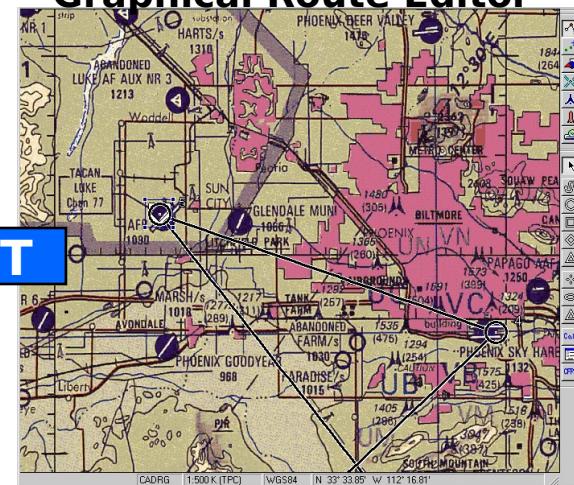
NGIT

Hover Tool



GEI

Graphical Route Editor

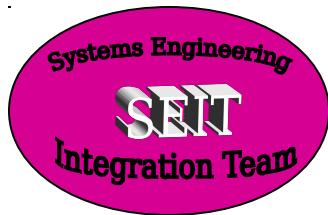


FPM

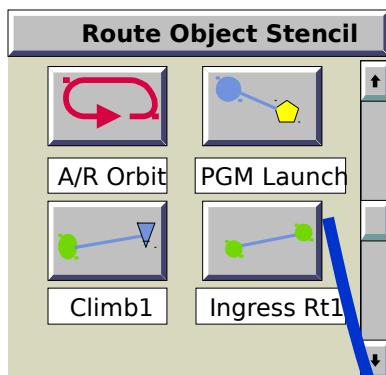
Route Editor



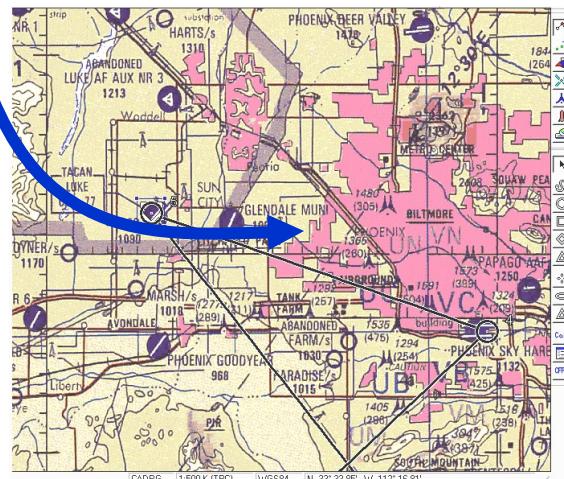
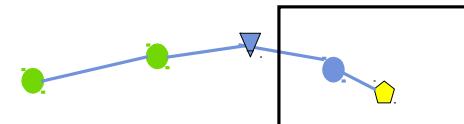
Route Generation



Mission Planning Fly, Fight,



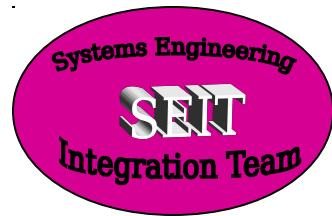
Graphical Route Editor



- **Graphical Route Editor Enhanced Capabilities**
 - **Stencils**
 - Provides drag-and-drop planning
 - UPC extensible
 - User extensible
 - **Route point connections**
 - Support weapon to carrier connections
 - Support multiple aircraft flying a common route segment
 - **Routes with multiple segments**
 - Multiple takeoffs
 - Multiple landings
 - Diverts
 - Disconnected segments

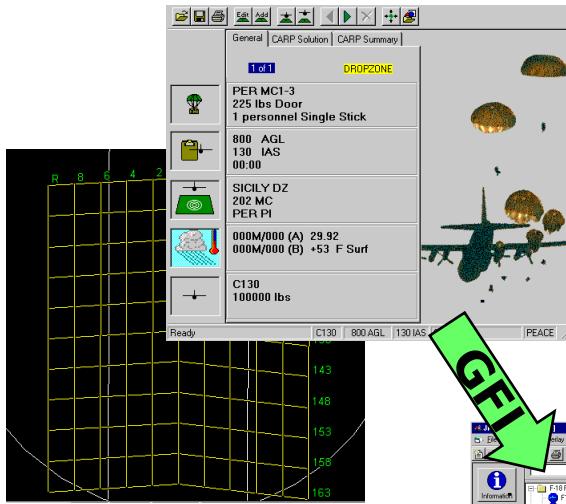


Target/Objective Area Planning

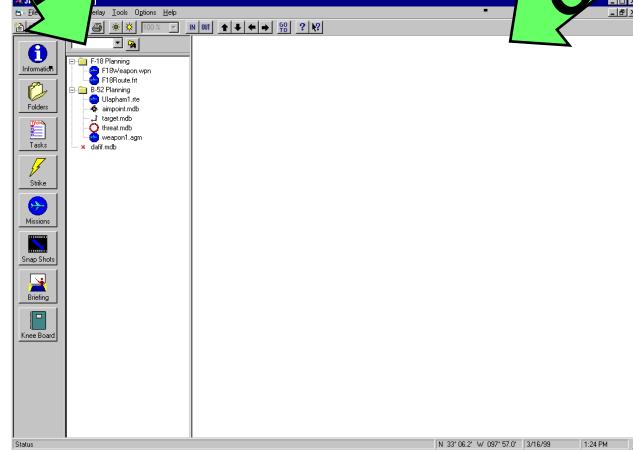
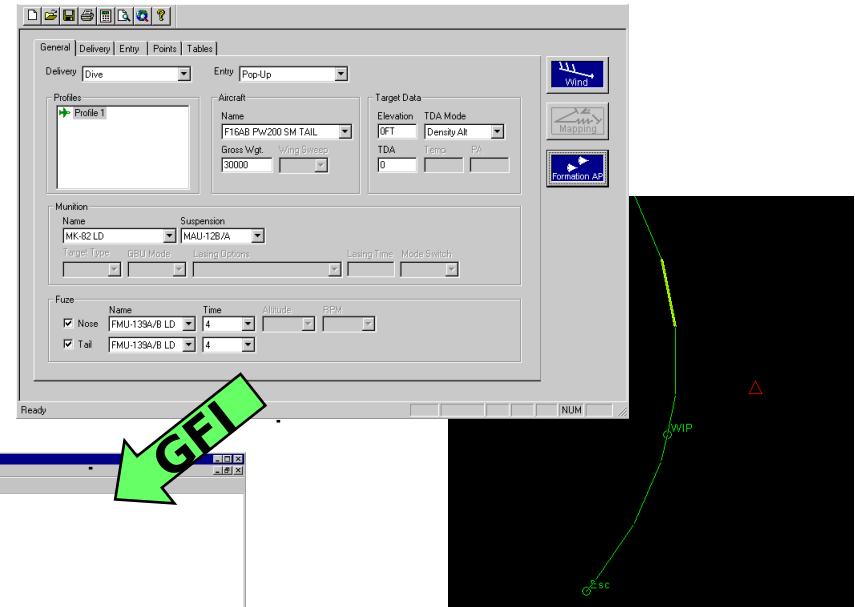


→ **Mission Planning Fly, Fight,**

Airdrop Planning

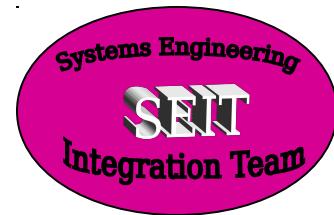


Weapon Delivery Planning

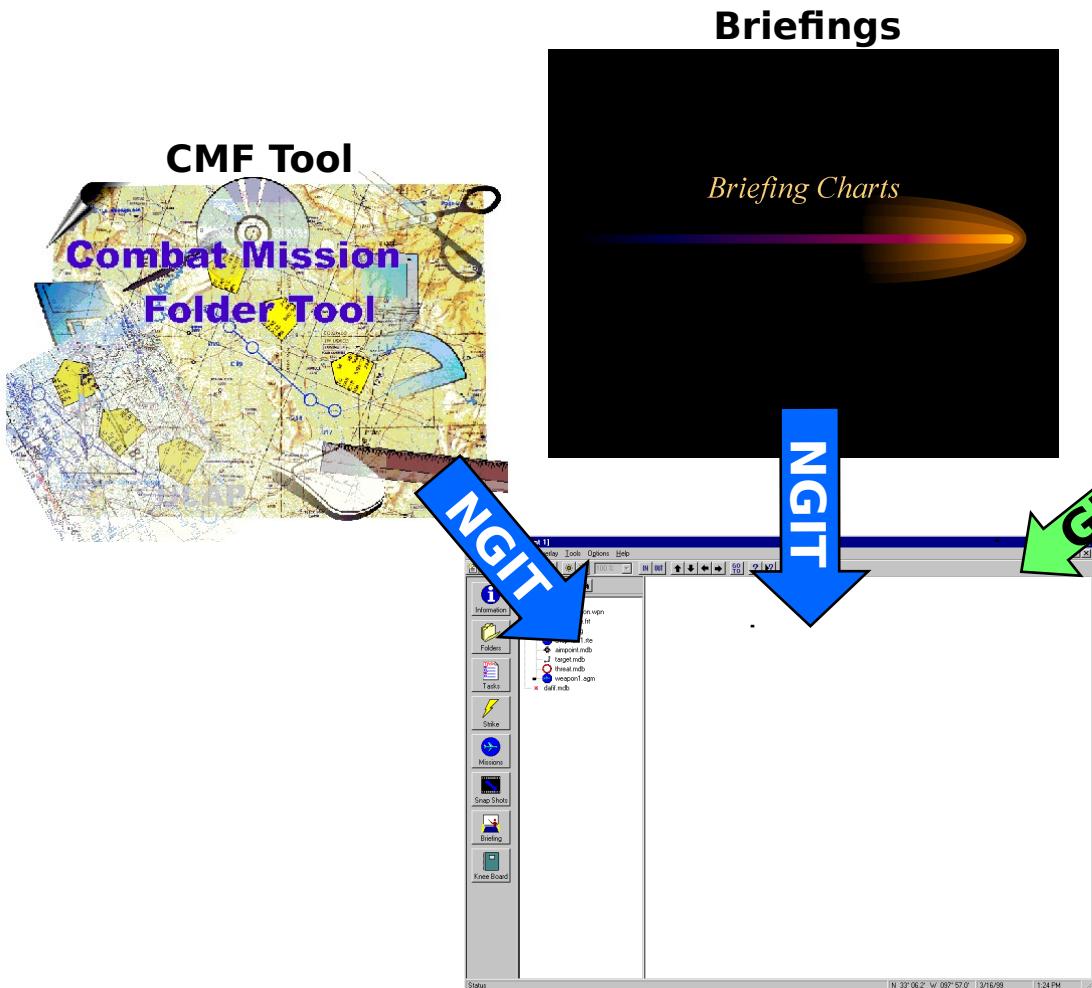




Mission Planning Aids Generation

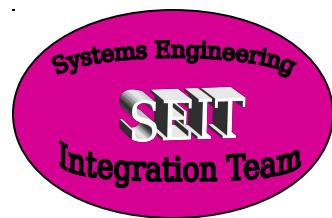


Mission Planning Fly, Fight,

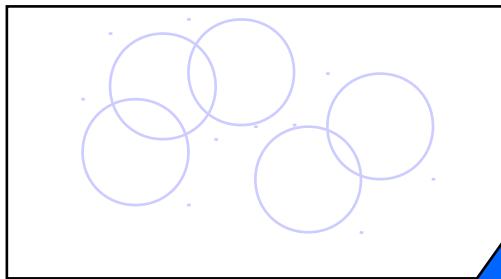




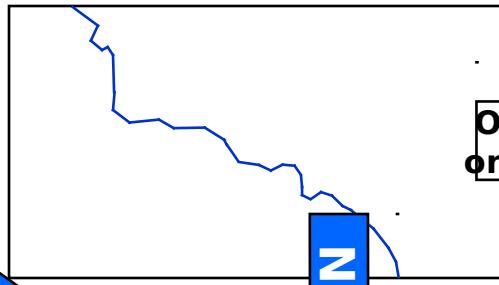
Tactical Picture/Situation Analysis



Threat & OB Overlay

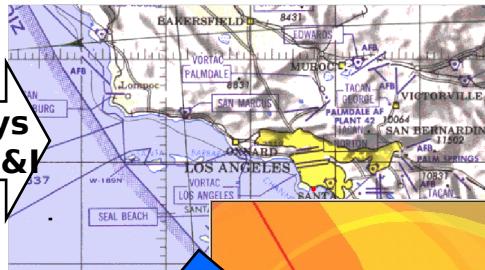


VPS

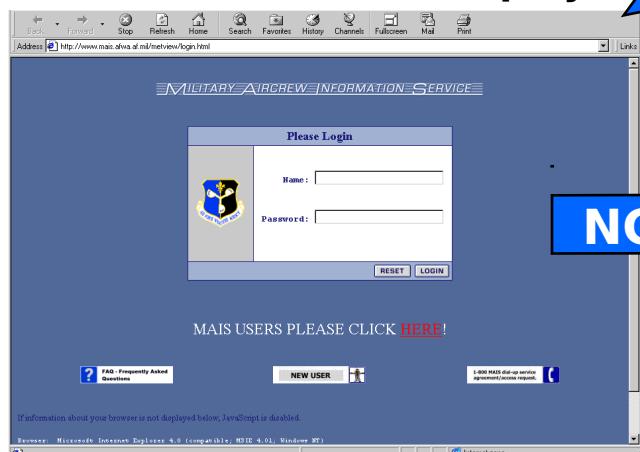


Overlays
on MCG&I

MCG&I Displays - 2D & 3D



Weather Data Display



NGIT

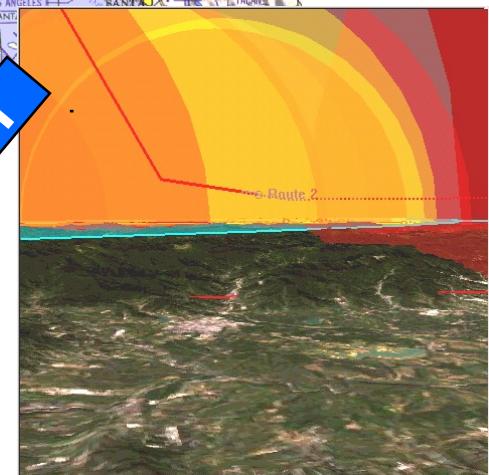
NGIT

NGIT

Terrain
Mask
Generator

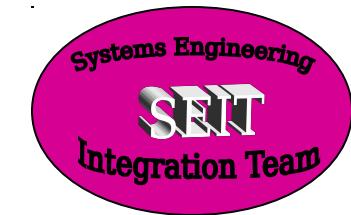
MCG&I
MCG&I

MCG&I
Data
Object

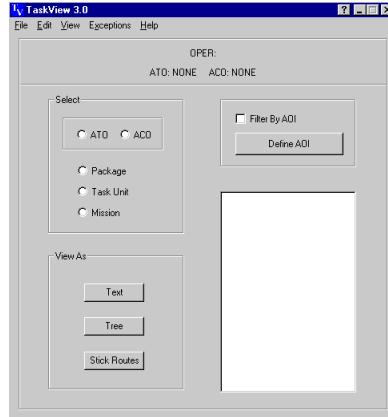




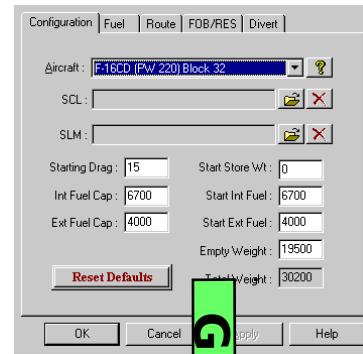
Mission Concept Development/Setup



ATO Parser

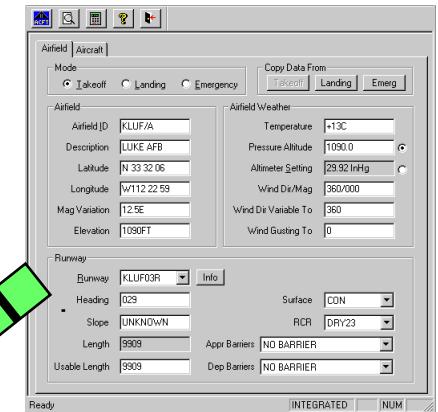


Platform Definition



Mission Planning Fly, Fight,

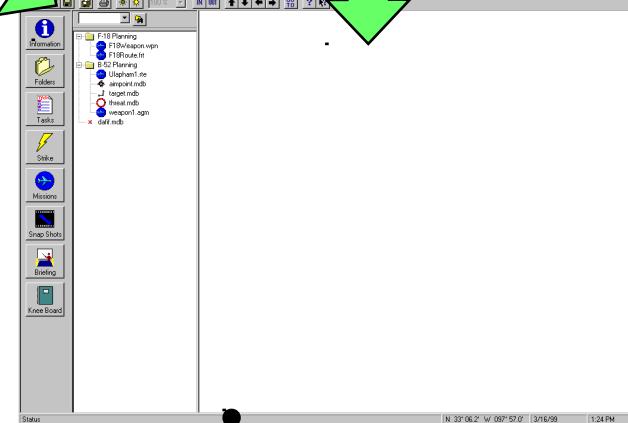
Launch & Recovery



GFI

GFI

GFI



FPM

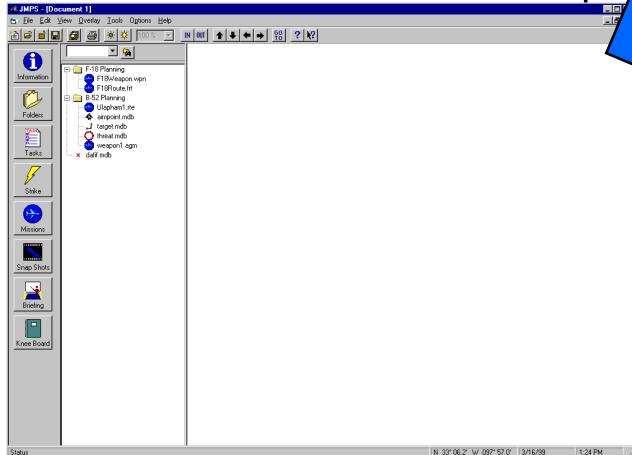


Adaptation



Mission Planning Fly, Fight,

Configuration Manager



Internet Explorer 4.0 Component Download - Microsoft Internet Explorer

File Edit View Go Favorites Help

JMPS Dynamic Configuration Component Download

Instructions
Select the tasks you wish to perform from the list below. Components will automatically be installed. Click the arrow symbol ▶ next to each item to reveal more information. Press the "Next" button when you have finished your selections.

Upgrade All Click to select all installed components which have an upgrade available.

	Size / Est Time	Status
<input checked="" type="checkbox"/> F-18 Mission Planning	534K / 5 sec	Not Installed
<input checked="" type="checkbox"/> F-18 Aircraft Configuration ▶	412K / 4 sec	Not Installed
<input checked="" type="checkbox"/> F-18 Mission Computer Configuration ▶	1038K / 9 sec	Not Installed
<input type="checkbox"/> F-18 Weaponizer ▶	2452K / 20 sec	Not Installed
<input checked="" type="checkbox"/> F-18 Autorouter ▶	8141K / 71 sec	Not Installed
<input checked="" type="checkbox"/> F-18 Route Editor ▶	657K / 7 sec	Not Installed
<input checked="" type="checkbox"/> F-18 Take-off and Landing ▶	602K / 6 sec	Not Installed
<input checked="" type="checkbox"/> F-18 Tactics ▶	1547K / 14 sec	Not Installed
<input type="checkbox"/> F-18 Data Transfer Cartridge Load ▶		
Collaboration		
<input type="checkbox"/> Microsoft NetMeeting ▶	1867K / 17 sec	Already Installed
<input checked="" type="checkbox"/> Collaborative Planning Whiteboard ▶	1163K / 12 sec	Upgrade Available
<input type="checkbox"/> Microsoft Chat 2.0 ▶	854K / 7 sec	Already Installed
Total Download Size and Time	13549K / 121 sec	Next...

Done My Computer